US Army Corps of Engineers & Washington Headquarters Services

"Turning a DoD GOLD Leaf"
BRAC 133 @ Mark Center

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E2S2 Symposium & Exhibition, June 14-17, 2010

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BRAC 133 at Mark Center

"*Turning a DoD GOLD Leaf*"

Overview

- Background of project and team

- Moving the project from Silver to Gold
  - Integrated approach
  - Review of LEED scorecard

- Quality Assurance to keep us on track

BRAC 133 at Mark Center

- **Base Realignment and Closure**

- **In 2005, the BRAC process mandated the move of many DoD offices from leased office space to secure sites that could meet DoD's high anti-terrorism security standards.**

BRAC 133 at Mark Center

- **BRAC-133 at Mark Center facility will be a new office complex in Alexandria, VA designed to house over 6,400 Department of Defense personnel**

- **1.8 million square feet of world class office space**

- **Expected turnover – September 2011**

- **Project is being designed and constructed to achieve a U.S. Green Building Council, Leadership in Energy and Environmental Design (LEED), New Construction "GOLD" level-rating**

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Government Team

- U.S. Army's Fort Belvoir, VA
- US Army Corps of Engineers
- Washington Headquarters Services

Contracting Team

- Duke Realty Corporation
- Clark Construction
- HKS Inc.
- Studios Architecture
- Wisnewski Blair & Associates

*other teaming partners

BRAC 133 at Mark Center

BRAC 133 at Mark Center

- The BRAC 133 project will be built on 16 acre site in Mark Center
- Two vertical office towers
- Two parking structures
- Visitor's Center
- Publicly accessible community Transportation Center

BRAC 133 at Mark Center

"Going For GOLD"

- **Sustainability integrated into request for proposal. Stated mandatory USGBC LEED "Silver" level-rating**
- **Team easily demonstrated Silver level achievable through design proposed.**
- **By implementing cutting-edge strategies in environmentally sustainable construction and site development the team ensured the highest levels of water savings, energy efficiency, indoor environmental quality, and sustainable site design – the team would be able to achieve GOLD**

"Going For GOLD"

Sustainability goals:

It is anticipated that the building will consume 30% less energy than a traditional building of the same size.

- **Energy Efficiency features include:**
  - **High Efficiency Central Chiller Plant**
  - **Demand Controlled Ventilation**
  - **Energy efficient lighting, including LED fixtures and Occupancy Sensors**
  - **Dedicated Outdoor Air System with Energy Recovery Wheels**

"Going For GOLD"

Sustainability goals:

It is anticipated that the building will use 45% less water than a traditional building of the same size–a savings of 4.5 million gallons annually.

- **Water saving strategies include:**
  - **Low flow faucets, shower heads, and plumbing fixtures**
  - **Zero irrigation and drought tolerant landscaping**

"Going For GOLD"

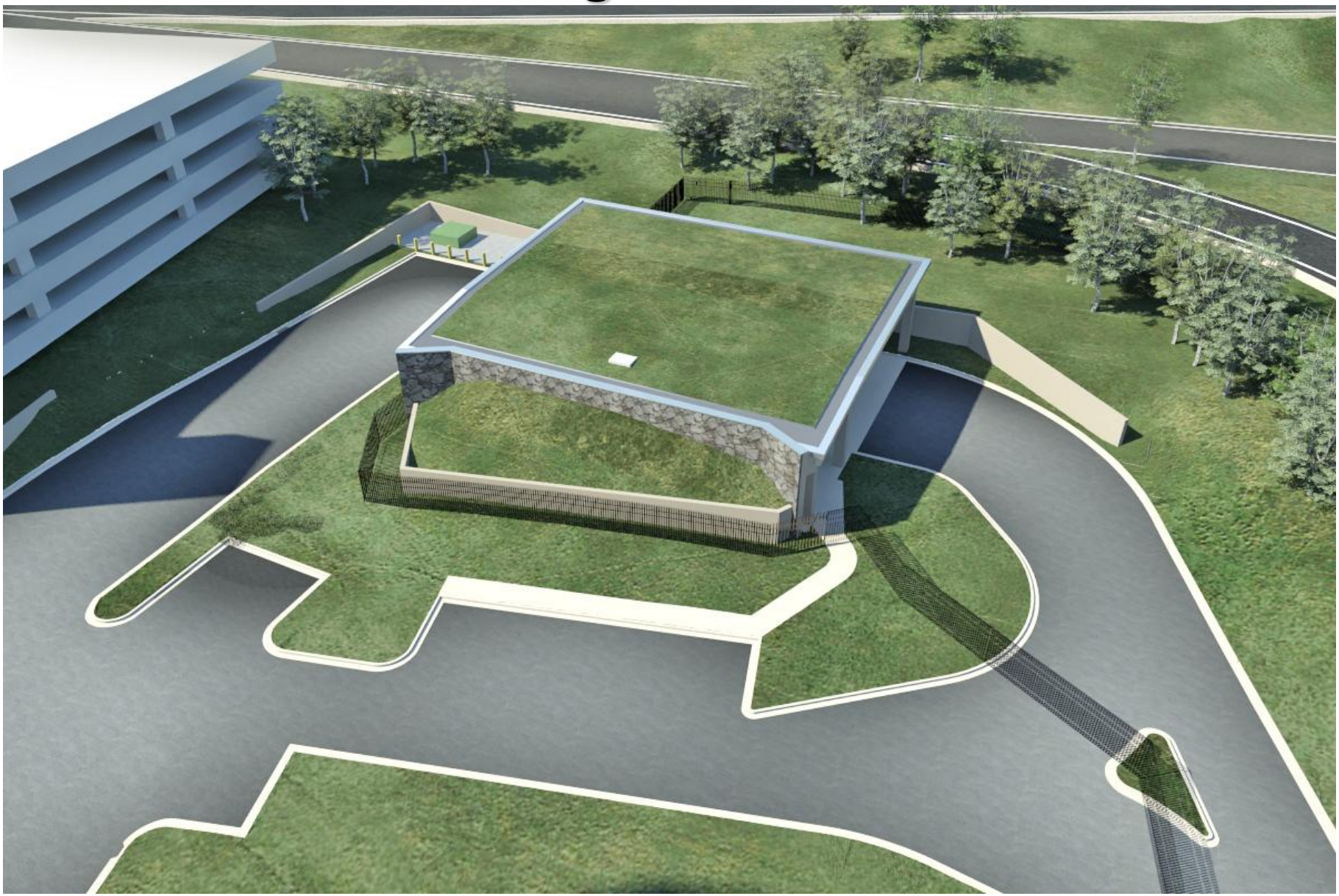
Sustainability goals:

- ***At the current pace, 6 million pounds of construction waste will be recycled during the 3 year building project. This waste would typically go to a landfill on a non-LEED project.***

- ***BRAC 133 will include it's own Transportation Center to encourage use of mass transit such as busses and shuttle services. Onsite parking is limited to 60% of the overall occupants, and 375 preferred parking spots are allocated for carpools and hybrid vehicles. Amenities are also provided for bicycle commuting.***

- ***The project design also maximizes the use of visible green elements, including green roof designs for the Visitor's Center and Remote Inspection Facility, a bioswale for filtering stormwater runoff, and a green screen that wraps the façade of one parking structure.***

"Going For GOLD"



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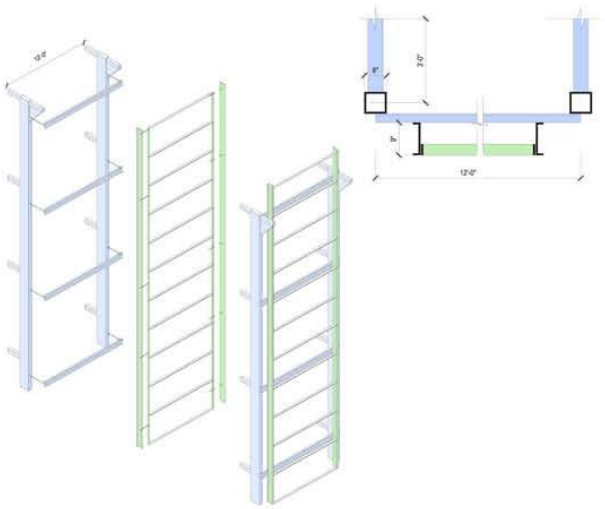
GREEN SCREEN DETAIL



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NORTH PARKING STRUCTURE VIEW RENDERINGS

A0-09B R1
October 19, 2009

WBA HKS CLARK DESIGN BUILD Duke REALTY CORPORATION

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TOWER NORTH APPROACH VIEW RENDERING

A0-04B R1
October 19, 2009

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NORTH PARKING & TRANSPORTATION CENTER RENDERING

A0-09A R1
October 19, 2009

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BRAC 133 LEED Scorecard

Sustainable Sites	
Prerequisite 1: Erosion & Sediment Control	Y
Credit 1: Site Selection	
Credit 2: Urban Redevelopment/Development Density	1
Credit 3: Brownfield Redevelopment	
Credit 4.1: Alternative Transportation: Public Transportation Access	1
Credit 4.2: Alternative Transportation: Bicycle Storage & Changing Rooms	1
Credit 4.3: Alternative Transportation: Alternative Fuel Refuel station	1
Credit 4.4: Alternative Transportation: Parking Capacity	1
Credit 5.1: Reduced Site Disturbance: Protect or Restore Open Space	
Credit 5.2: Reduced Site Disturbance: Development Footprint	1
Credit 6.1: Stormwater Management: Rate & Quantity	
Credit 6.2: Stormwater Management: Treatment	
Credit 7.1: Landscape & Exterior Design to Reduce Heat Islands: Non-roof	1
Credit 7.2: Landscape & Exterior Design to Reduce Heat Islands: Roof	1
Credit 8: Light Pollution Reduction	
Points Achieved:	**8**

BRAC 133 LEED Scorecard

Water Efficiency	
Credit 1.1: Water Efficient Landscaping: Reduce by 50%	1
Credit 2.1: Water Efficient Landscaping: Non potable use or no irrigation	1
Credit 2: Innovative Wastewater Technologies	1
Credit 3.1: Water Use Reduction: 20% Reduction	1
Credit 3.2: Water Use Reduction: 30% Reduction	
Points Achieved:	**4**

BRAC 133 LEED Scorecard

Energy & Atmosphere	
Prerequisite 1: Fundamental Building Systems Commissioning	Y
Prerequisite 2: Minimum Energy Performance	Y
Prerequisite 3: CFC Reduction in HVAC&R Equipment	Y
Credit 1.1: Optimizing Energy Performance: 20% New/10% Existing	2
Credit 1.1: Optimizing Energy Performance: 20% New/10% Existing	1
Credit 1.1: Optimizing Energy Performance: 20% New/10% Existing	1
Credit 1.1: Optimizing Energy Performance: 20% New/10% Existing	1
Credit 1.1: Optimizing Energy Performance: 20% New/10% Existing	
Credit 2.1: Renewable Energy: 5%	
Credit 2.2: Renewable Energy: 10%	
Credit 2.3: Renewable Energy: 20%	
Credit 3: Additional Commissioning	1
Credit 4: Ozone Depletion	1
Credit 5: Measurement & Verification	1
Credit 6: Green Power	
Points Achieved:	**8**

BRAC 133 LEED Scorecard

Materials & Resources	
Prerequisite 1: Storage & Collections of Recyclables	Y
Credit 1.1: Building Reuse: Maintain 75% of Existing Shell	
Credit 1.2: Building Reuse: Maintain 100% of Existing Shell	
Credit 1.3: Building Reuse: Maintain 100% Shell & 50% Non-shell	
Credit 2.1: Construction Waste Management: Divert 50%	1
Credit 2.2: Construction Waste Management: Divert 75%	1
Credit 3.1: Resource Reuse: Specify 5%	
Credit 3.2: Resource Reuse: Specify 10%	
Credit 4.1: Recycled Content: 10%	1
Credit 4.2: Recycled Content: 20%	1
Credit 5.1: Local/Regional Materials: 20% Manufactured Locally	1
Credit 5.2: Local/Regional Materials: of 20% above, 50% Harvested Locally	1
Credit 6: Rapidly Renewable Materials	
Credit 7: Certified Wood	1
Points Achieved:	**7**

BRAC 133 LEED Scorecard

Indoor Environmental Quality	
Prerequisite 1: Minimum Indoor Air Quality (IAQ) Performance	Y
Prerequisite 2: Environmental Tobacco Smoke (ETS) Control	Y
Credit 1: Carbon Dioxide (CO2) monitoring	1
Credit 2: Increase Ventilation Effectiveness	1
Credit 3.1: Construction IAQ Management Plan: During Construction	1
Credit 3.2: Construction IAQ Management Plan: Before Occupancy	1
Credit 4.1: Low-Emitting Materials: Adhesives & Sealants	1
Credit 4.2: Low-Emitting Materials: Paints	1
Credit 4.3: Low-Emitting Materials: Carpet	1
Credit 4.4: Low-Emitting Materials: Composite Wood	1
Credit 5: Indoor Chemical & Pollutant Source Control	
Credit 6.1: Controllability of Systems: Perimeter	1
Credit 6.2: Controllability of Systems: Non-Perimeter	
Credit 7.1: Thermal Comfort: Comply with ASHRAE 55-1962	1
Credit 7.2: Thermal Comfort: Permanent Monitoring System	1
Credit 8.1: Daylight & Views: Daylight 75% of spaces	
Credit 8.2: Daylight & Views: Views for 90% of spaces	
Points Achieved:	**11**

BRAC 133 LEED Scorecard

Innovative & Design Process	
ID Green Education	1
ID Green Cleaning	1
ID Recycled Content 30%	1
ID Local Materials 30%	1
ID Construction Waste Management >75%	
ID HVAC Innovations	
Credit 2: LEED Accredited Professional	1
Points Achieved:	**5**

TOTAL Project points:	43

LEED Certified = 26-32 points

LEED Silver = 33-38 points

LEED Gold = 39-51 points

LEED Platinum = 52 or more points

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Sustainability & Team Management

- ✓ Contract requirements upheld and surpassed
- ✓ Specifications integrated sustainability and LEED requirements
- ✓ Full team integration achieved
- ✓ Weekly Design meetings – sustainability discussed
- ✓ Semi-monthly LEED review meetings – full team participation
- ✓ Constant monitoring

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In conclusion…

- ✓LEED ongoing – design submission in review
- ✓Sustainability and team integration key to success
- ✓High Performing building for new tenants